

The opinion in support of the decision being entered today was *not* written for publication and is *not* binding precedent of the Board.

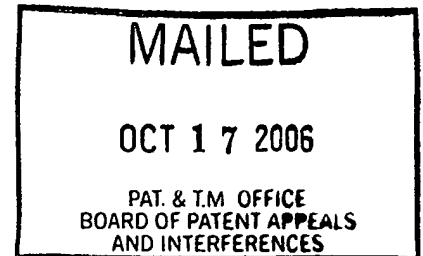
**UNITED STATES PATENT AND TRADEMARK OFFICE**

**BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES**

*Ex parte* OLIVER L. RICHARDS and PAUL M. GREENLAND

Appeal No. 2006-1424  
Application No. 09/441,119

ON BRIEF



Before BARRY, SAADAT, and HOMERE, *Administrative Patent Judges*.

BARRY, *Administrative Patent Judge*.

A patent examiner rejected claims 1-14. The appellants appeal therefrom under 35 U.S.C. § 134(a). We reverse.

**I. BACKGROUND**

The invention at issue on appeal concerns a low noise block converter ("LNB"). A satellite television ("TV") receiver employs an LNB to control the reception of satellite television signals. Functions of the LNB include downconverting received signals, changing the frequency band of signal reception, changing the signal polarization of reception, and controlling plural receive antennae. To perform these functions, the LNB receives control and power signals from circuitry housed in a "set top box." (Spec. at 1.)

EUTELSAT, a European organization that governs satellite TV communications, has established specifications for the aforementioned control and power signals. For example, digital control signals are nominally transmitted as a 13 V signal for a logical zero and as an 18 V signal for a logical one. (*Id.*) In practice, however, a logical zero corresponds more broadly to 12-14 volts, and a logical one corresponds to 17-20 volts. (*Id.* at 1-2.)

Adjustable linear amplifiers are conventionally used to provide control and power signals to an LNB. When a logical zero level of 12 V is selected, however, the resulting power dissipation of the linear amplifier approaches 5 W. (*Id.* at 2.)

Accordingly, the appellants' LNB supply and control voltage regulator includes a DC/DC switch-mode power supply providing a regulated output voltage to a linear amplifier. The output voltage of the linear amplifier has an adjustable DC voltage level and is modulated by an analog AC tone signal to provide power and control signals to an LNB of a satellite receiver over a single conductor. The regulated output voltage of the DC/DC switch-mode power supply tracks the selected DC voltage level, so as to minimize the voltage drop across the linear amplifier, (*id.* at 3), and lower power dissipation. (*Id.* at 4.)

A further understanding of the invention can be achieved by reading the following claim.

1. A circuit for providing a power and control signal selected from a plurality of DC voltage levels and being modulated by an analog AC tone signal to satellite receiver apparatus on a single conductor, comprising:

a switch-mode power supply having an input port to which an input voltage is applied, a feedback port responsive to a reference voltage indicative of said selected DC voltage level, and an output port at which a regulated output voltage is provided, wherein said regulated output voltage is greater than said selected DC voltage level by a predetermined amount; and

a linear amplifier having an input port coupled to said output port of said switch-mode power supply, a control port to which said reference voltage indicative of said selected DC voltage level is applied, and an output port at which an output voltage having the selected DC voltage level and being modulated by the analog AC tone signal is provided.

Claims 1-11 stand rejected under 35 U.S.C. § 103(a) as obvious over St Microelectronics, LNBP10 Series LNBP20: *LNBP Supply and Control Voltage Regulator (Parallel Interface)* data sheet ("LNBP10") and U.S. Patent No. 5,893,023 ("Vizier").

Claims 12-14 stand rejected under § 103(a) as obvious over LNBP10; Vizier; and U.S. Patent No. 5,422,562 ("Mammano").

## II. OPINION

"Rather than reiterate the positions of the examiner or the appellants *in toto*, we focus on a point of contention therebetween." *Ex parte Siemel*, No. 2005-2429, 2006 WL 1665423, at \*1 (Bd.Pat.App & Int. 2006). The examiner "point[s] out that LNBP10 reference already contemplates a system using a power supply to provide a regulated input voltage to a line[a]r amplifier, wherein the line[a]r amplifier provides an output voltage having the selected DC voltage level and being modulated by an AC tone signal. The LNBP10 lacks a switched mode power supply to supply the plurality of DC voltage level [sic], for which Vizer's teachings are relied upon." (Examiner's Answer at 10.) The appellants argue, "The passage used by the Examiner to show a single voltage source by the LNBP10 reference contemplates only a single fixed 23V voltage source and does not contemplate a voltage source 'greater than said selected DC voltage level by a predetermined amount,' as set forth in Claims 1, 7, and 11." (Reply Br. at 4.)

In addressing the point of contention, the Board conducts a two-step analysis. First, we construe the independent claims at issue to determine their scope. Second, we determine whether the construed claims would have been obvious.

#### A. CLAIM CONSTRUCTION

"Analysis begins with a key legal question — *what is the invention claimed?*"

*Panduit Corp. v. Dennison Mfg. Co.*, 810 F.2d 1561, 1567, 1 USPQ2d 1593, 1597 (Fed. Cir. 1987). In answering the question "[t]he Patent and Trademark Office (PTO) must consider all claim limitations when determining patentability of an invention over the prior art." *In re Lowry*, 32 F.3d 1579, 1582, 32 USPQ2d 1031, 1034 (Fed. Cir. 1994) (citing *In re Gulack*, 703 F.2d 1381, 1385, 217 USPQ 401, 403-04 (Fed. Cir. 1983)).

Here, claim 1 recites in pertinent part the following limitations:

a switch-mode power supply having an input port to which an input voltage is applied, a feedback port responsive to a reference voltage indicative of said selected DC voltage level, and an output port at which a regulated output voltage is provided, wherein said regulated output voltage is greater than said selected DC voltage level by a predetermined amount. . . .

Claims 7 and 11 include similar limitations. Considering all the limitations, the independent claims require that the regulated voltage output by a switch-mode power supply be greater than a reference voltage indicating a selected DC voltage level by a predetermined amount.

B. OBVIOUSNESS DETERMINATION

"Having determined what subject matter is being claimed, the next inquiry is whether the subject matter would have been obvious." *Ex Parte Massingill*, No. 2003-0506, 2004 WL 1646421, at \*3 (Bd.Pat.App & Int. 2004). "In rejecting claims under 35 U.S.C. Section 103, the examiner bears the initial burden of presenting a *prima facie* case of obviousness." *In re Rijckaert*, 9 F.3d 1531, 1532, 28 USPQ2d 1955, 1956 (Fed. Cir. 1993) (citing *In re Oetiker*, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992)). "A *prima facie* case of obviousness is established when the teachings from the prior art itself would appear to have suggested the claimed subject matter to a person of ordinary skill in the art." *In re Bell*, 991 F.2d 781, 783, 26 USPQ2d 1529, 1531 (Fed. Cir. 1993) (quoting *In re Rinehart*, 531 F.2d 1048, 1051, 189 USPQ 143, 147 (CCPA 1976)).

Here, the examiner admits, "The LNBP10 lacks a[ny] switched mode power supply. . . ." (Examiner's Answer at 10.) For its part, Vizer discloses a "switch mode power supply including a switching transistor T1, a capacitor 1, a resistor 2, diode 3, inductor 4 and a capacitor 5. Input 6 of the switch mode power supply is connected to a DC voltage." (Col. 2, ll. 5-8.)

"A rejection based on section 103 clearly must rest on a factual basis. . . ." *In re Warner*, 379 F.2d 1011, 1017, 154 USPQ 173, 178 (CCPA 1967). "The Patent Office has the initial duty of supplying the factual basis for its rejection. It may not . . . resort to speculation, unfounded assumptions or hindsight reconstruction to supply deficiencies in its factual basis." *Id.* Here, although "[a]t output 7 a DC operating voltage  $U_d$  is produced," (*id.* at ll. 8-9), the examiner does not allege, let alone show, that  $U_d$  is greater than a reference voltage indicating a selected DC voltage level by a predetermined amount. For our part, we will not resort to speculation or unfounded assumptions as to the limitation. Instead, we reverse the obviousness rejection of claims 1, 7, and 11, and of claims 2-6 and 8-10, which respectively depend from the first two independent claims.


Furthermore, the examiner does not allege, let alone show, that the addition of Mammano cures the aforementioned deficiency of LNBP10 or Vizier. Absent a teaching or suggestion that the regulated voltage output by a switch-mode power supply be greater than a reference voltage indicating a selected DC voltage level by a predetermined amount, we are unpersuaded of a *prima facie* case of obviousness. Therefore, we reverse the obviousness rejection of claims 12-14, which depend from claim 11.

### III. CONCLUSION

In summary, the rejections of claims 1-14 under § 103(a) are reversed.



  
LANCE LEONARD BARRY  
Administrative Patent Judge

  
MAHSHID D. SAADAT  
Administrative Patent Judge

Jean R. Homere  
JEAN R. HOMERE  
Administrative Patent Judge

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